NASA Procedural Requirements

NPR 8705.6A
Effective Date: April 09, 2009
Expiration Date: April 09, 2014

COMPLIANCE IS MANDATORY

Printable Format (PDF)

Request Notification of Change (NASA Only)

Subject: Safety and Mission Assurance Audits, Reviews, and Assessments

Responsible Office: Office of Safety and Mission Assurance

Appendix A. Definitions

Audit/Review Guide. A guide defining the overall scope, authority, procedures, applicable documents, and administrative and logistic details necessary to conduct an onsite audit or review. It also includes a set of detailed questions to be covered during the onsite audit/review based on requirements from Agency-level SMA documents, industry standards, and NASA Center-specific procedures and requirements.

Audit/Review Report. A document that provides the results of an onsite audit or review. This report contains, at a minimum, an Executive Summary and a comprehensive discussion/description of all the findings resulting from the onsite audit or review.

Audit/Review Team. A team comprised of subject matter experts from NASA Headquarters, NASA Centers, and potentially non-NASA organizations selected to conduct the NASA Headquarters-led onsite audits and reviews supporting IFO SMA Audits and PA&R process activities.

Audit Team Leader or Audit/Review Lead. The NASA employee assigned to execute the required preaudit, audit, and postaudit actions for NASA Headquarters-led or Center-led onsite audits and reviews conducted in support of IFO SMA Audits and the PA&R process, respectively. For Headquarters-led audits, the employee will be from the Office of Safety and Mission Assurance. For Center-led onsite audits/reviews, the employee will be from the appropriate Center SMA organization.

Baseline Requirements Set (BRS). The BRS represents a set of requirements jointly negotiated among the program/project, engineering community, SMA community, and, as appropriate, institutional organizations. Typically, the BRS represents a subset of Agency SMA process, technical, and engineering performance specification requirements uniquely applicable to a given NASA program, project, facility, or operation.

Capable/Capability. For the purpose of this document, capability refers to specific organizational and workforce adequacy attributes as follows: organizational funding/structure/stability, staffing level, workforce experience, workforce skill mix, workforce training, tools, techniques, and methodologies.

Center SMA Director. As used in this directive, this term includes all Center management personnel designated by the Center Director to implement Agency IFO SMA Audits, PA&R, and SMSR requirements.

Compliance Verification. Compliance verification includes: 1) verifying that appropriate technical and process requirements are in place (requirement flow-down verification), 2) verifying that documented SMA requirements are in place and capable, and 3) observing work activities and products to verify process implementation and compliance with process and technical requirements (e.g., onsite in-process audits and reviews for verification of work discipline).

Corrective Action Plan. A document that addresses root causes for findings and the actions to correct specific individual problems, as well as actions taken to correct any potential systemic or process problems in order to prevent recurrence. This plan includes designation of a schedule for completing the actions, as well as designating the responsible party(ies) assigned to perform the actions.

Engineering Performance Specification Requirements. Requirements that are typically quantitative engineering

specifications related to a specific aerospace system design, test, manufacturing, assembly integration, or operational activity.

Findings. A conclusion, positive or negative, based on facts established during the investigation by the investigating authority (i.e., cause, contributing factor, and observation (per NPR 8621.1, NASA Procedural Requirements for Mishap Reporting, Investigating, and Recordkeeping). For the purposes of this NPR, the word "investigation" refers to SMA audits, reviews, and assessments.

IFO SMA Audit. An independent review of NASA Center compliance with Institutional, Facility, and Operational SMA requirements. This includes Federal, State, or local safety requirements, NASA SMA process requirements, and technical requirements.

Mission Assurance Portfolio. A compendium of objective quality evidence (e.g., analyses, test results, build reviews, records of decisions necessary) to support the IFO SMA Audit, PA&R, and SMSR processes.

Mission Assurance Process Map. The Mission Assurance Process Map is a high-level, graphical representation of governing SMA policy and requirements, processes, and key participant roles, responsibilities, and interactions. It also includes the reporting structure that constitutes a program's/project's SMA functional flow.

Mission Assurance Process Matrix. The Mission Assurance Process Matrix is constructed to identify program life cycle assurance agents and specific assurance activities, processes, responsibilities, accountability, depth of penetration, and independence. The matrix includes key assurance personnel in Engineering, Manufacturing, Program Management, Operations, and SMA.

Noncompliance. A failure to comply with Federal, State, local, Agency, and/or Center requirements. A noncompliance could lead to the loss of life or injury to NASA personnel or the public, loss of or damage to high-value equipment, or reduction of the likelihood for mission success.

Objective Quality Evidence. Any statement of fact, either quantitative or qualitative, pertaining to the quality of a product or service based on observations, measurements, or tests which can be verified (Evidence will be expressed in terms of specific quality requirements or characteristics. These characteristics are identified in drawings, specifications, and other documents which describe the item, process, or procedure.) (per NPR 8705.2, Human-Rating Requirements for Space Systems).

Observation. A condition that is not contrary to or in violation of documented requirements but, in the judgment of an auditor, warrants additional information, clarification, or improvement.

Residual Risk. Any risk that remains after all mitigation and controls have been applied.

Residual Risk Profile. A summary of individual safety and/or mission success residual risks associated with the program/project. These individual risks may be associated with technical issues, minority opinions, establishment of requirements, nonconformance with requirements, lack of process/organizational capability, and institutional, facility, or operational related risks. It is presented as a severity vs. likelihood matrix per the program/project risk management plan.

Risk. The combination of the probability that a program or project will experience an undesired event (some examples include a cost overrun, schedule slippage, safety mishap, health problem, malicious activities, environmental impact, failure to achieve a needed scientific or technological breakthrough or mission success criteria) and the consequences, impact, or severity of the undesired event, were it to occur. Both the probability and consequences may have associated uncertainties (per NPR 7120.5, NASA Program and Project Management Processes and Requirements).

Safety. Freedom from those conditions that can cause death, injury, occupational illness, damage to or loss of equipment or property, or damage to the environment (per NPR 8715.3, NASA Safety Manual).

Safety and Mission Assurance Manager. An individual assigned from the Center SMA organization to provide SMA support to a specific program/project and to act as liaison between the program/project and the Center SMA organization.

Safety and Mission Assurance Process Requirements. For the purpose of this document, SMA process requirements are defined as those requirements imposed to ensure that safety engineering, reliability engineering, maintainability engineering, and quality assurance processes are in place for Agency programs, projects, facilities, and operations.

Safety and Mission Assurance Technical Requirements. For the purpose of this document, SMA technical requirements are defined as engineering requirements established for assuring the conduct of safe and successful activities and missions. These requirements include both "how to do it" requirements as well as "how to check it" requirements.

Safety and Mission Success Review (SMSR). The SMSR is a review held to prepare Agency safety and engineering management to participate program final readiness reviews preceding flights or launches, including

experimental/test launch vehicles, or other reviews determined by the Chief, Safety and Mission Assurance. The SMSR provides the knowledge, visibility, and understanding necessary for senior SMA and Engineering management to either concur or nonconcur in program decisions to proceed.

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